General

Guideline Title

Reducing pain during vaccine injections: clinical practice guideline.

Bibliographic Source(s)

Taddio A, McMurtry CM, Shah V, Pillai Riddell R, Chambers CT, Noel M, MacDonald NE, Rogers J, Bucci LM, Mousmanis P, Lang E, Halperin SA, Bowles S, Halpert C, Ipp M, Asmundson GJ, Rieder MJ, Robson K, Uleryk E, Antony MM, Dubey V, Hanrahan A, Lockett D, Scott J, Votta Bleeker E, HELPinKids&Adults. Reducing pain during vaccine injections: clinical practice guideline. CMAJ. 2015 Sep 22;187(13):975-82. [27 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

Note from the National Guideline Clearinghouse (NGC): The recommendations are summarized in Table 1 in the original guideline document and in age-based algorithms (see Appendices 1–4 of the full guideline [see the "Availability of Companion Documents" field]). The strong recommendations are included below. See Table 1 (part 2 and 3) in the original guideline document for the remainder of the recommendations.

Procedural Interventions (injection techniques)

The team recommends that no aspiration be used during intramuscular vaccine injections in individuals of all ages (strong recommendation; very low confidence in estimates of effect).

The team recommends injecting the most painful vaccine last (rather than first) during vaccine injections in individuals of all ages (strong recommendation; moderate confidence in estimates of effect).

Physical Interventions (body position and activity)

The team recommends breastfeeding be used during vaccine injections in children two years and younger (strong recommendation; very low confidence in estimates of effect).

The team recommends holding be used (rather than the child lying supine) during vaccine injections in children three years and younger (strong recommendation; very low confidence in estimates of effect).

The team recommends sitting upright be used (rather than the individual lying supine) during vaccine injections in children three years and older (strong recommendation; low confidence in estimates of effect).

Pharmacologic Interventions (pain medicine)

The team recommends topical anesthetics be applied before vaccine injections in children 12 years and younger (strong recommendation; very low confidence in estimates of effect).

The team recommends giving sucrose solution before vaccine injections in children two years and younger (strong recommendation; moderate confidence in estimates of effect).

Process Interventions (education and implementation)

The team recommends education of clinicians administering vaccine injections about pain management (strong recommendation; low confidence in estimates of effect).

The team recommends that parents be present during vaccine injections in children 10 years and younger (strong recommendation; very low confidence in estimates of effect).

The team recommends education of parents about pain management before the day of vaccination (strong recommendation; low confidence in estimates of effect).

The team recommends education of children three years and older and adults about pain management on the day of vaccination (strong recommendation; very low confidence in estimates of effect).

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Pain from vaccine injections

Note: Delayed pain (hours to days after injection) was not considered in the guideline.

Guideline Category

Management

Prevention

Clinical Specialty

Family Practice

Infectious Diseases

Internal Medicine

Nursing

Pediatrics

Intended Users

Advanced Practice Nurses

Nurses

Pharmacists

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

To provide recommendations for interventions that can mitigate vaccination pain

Target Population

Children 0-3 years, children >3-12 years, adolescents >12-17 years, and adults

Note: Recommendations for the management of fear in individuals with high levels of needle fear (i.e., individuals with persistent, intense apprehension of or fear in response to a needle procedure, who may endure needles with intense distress or avoidance) are reported separately, as they require knowledge and skills beyond those of practitioners who usually give vaccinations.

Interventions and Practices Considered

1. Procedural interventions (injection techniques)
    - No aspiration
    - Injecting most painful vaccine last
2. Physical interventions (body position and activity)
    - Breastfeeding during vaccine injection
    - Parent holding child (3 years and younger) or child sitting upright (3 years and older) rather than child lying supine
3. Pharmacologic interventions (pain medicine)
    - Topical anesthetics before vaccine (12 years and younger)
    - Sucrose solution before vaccine (two years and younger)
4. Process interventions (education and implementation)
    - Education for clinicians administering vaccine injections
    - Presence of parents during vaccine (children 10 years and younger)
    - Education for children and parents about pain management before and on the day of vaccination

Major Outcomes Considered

- Self-reported pain
- Self-reported fear
- Observer-rated distress (e.g., in infants and young children)

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Eligibility Criteria

Using Appraisal of Guidelines for Research and Evaluation (AGREE)-II principles (http://www.agreetrust.org) and Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology as guidance, HELPinKids&Adults, an interdisciplinary panel of clinicians, researchers, policy makers, and consumer stakeholders involved in aspects of guideline development and implementation, vaccination, and pain from across Canada identified clinical questions for inclusion.

Forty-seven candidate clinical question domains (including population, intervention, comparison) were initially proposed for inclusion. Questions were identified from the prior guideline, clinical practice, and existing research. An independent electronic vote was carried out to determine which candidate clinical question domains would be considered further. A cut-off of >2/3 majority in favor of including a clinical question domain was used as the threshold for preliminary inclusion. Using this method, 37 question domains were retained as preliminary questions.

Outcomes for each preliminary question domain were then selected by having team members independently vote on the importance of 13 candidate outcomes identified by them (delineated below) using a scoring system of 1 to 9. Voting was carried out electronically. Consistent with the GRADE framework, outcomes with a mean score of ≥7 were defined as critically important for decision making; those with a mean score of 4 to 6 were defined as important and included as outcomes of interest to the review; the remainder (mean score <4) were not considered further. In selecting outcomes, consideration was given to the perspectives of individuals undergoing vaccination, parents of children undergoing vaccination, and clinicians administering vaccinations; however, the perspective of the individual undergoing vaccination was prioritized to guide selection.

Modifications to clinical question domains and outcomes were made after a preliminary review and discussion of the research evidence at an in-person meeting of the project team. Several questions were removed due to a lack of confidence regarding the applicability of the evidence base to the vaccination context, and others were added to examine additive effects of combined interventions of interest and/or alterations in the timing or delivery of the interventions. Altogether, 49 clinical questions were included.

Composition of Clinical Questions—Participants, Interventions, Comparisons, Outcomes, Study Designs (PICOS)

Participants included individuals of all ages undergoing vaccine injections in inpatient and outpatient settings, including schools. If no data existed for vaccine injections, then the closest related procedure or context was included (e.g., venipuncture in outpatient clinic). Interventions included single and combination interventions used for vaccine injection pain management (or related procedures/contexts if there were no data for vaccine injections) including: procedural strategies, physical strategies, pharmacological strategies, psychological (and information provision) strategies, and process (education/implementation) strategies. Comparators included: no treatment control (no documented intervention above usual/routine care) or other comparators, as specified by the clinical question.

Cointerventions were allowed depending on the clinical question. The additive benefit of an intervention over another was also examined, as specified by the clinical question. Potential outcomes considered included: pain, fear, distress, preferences (for individuals undergoing vaccination, parents of children undergoing vaccination, clinicians administering vaccinations), satisfaction (individuals, parents, clinicians), fainting, procedure outcomes (duration, success), parent fear, knowledge about pain interventions (individuals, parents, clinicians), pain intervention utilization (individuals, parents, clinicians), safety outcomes, vaccine compliance, and/or memory of pain and/or fear. Study designs considered included randomized-controlled trials (RCTs) and quasi-RCTs with between-groups (parallel) and cross-over designs. Cluster trials were also included.

Information Sources and Search Strategy

The OvidSP platform was used to run the search strategy in MEDLINE, EMBASE, and PsycINFO databases; EBSCOHost was used for CINAHL and ProQuest was used for ProQuest Dissertations & Theses Global. The databases were searched from their date of inception; the last update was February 26, 2015. No language restrictions were applied. Search terms used to identify studies for inclusion were determined by the authors based on their content expertise in this area in consultation with an academic librarian, who conducted the searches. Additional studies were identified from reference lists of included studies and by consulting experts working in this topic area. The titles and abstracts of retrieved citations were imported into an EndNote library and scanned by 2 reviewers. The reviewers identified citations to be retrieved as full-text articles, and these were assessed for eligibility by 2 reviewers. Reviewers were not blinded to the authors or settings of the studies in the scanned articles.

Inclusion and Exclusion Criteria

The review included original research articles involving: (1) individuals of all ages; (2) interventions included in the clinical questions; (3) vaccine injections and/or the closest related procedure or context to vaccine injections; and (4) highest level of evidence available (i.e., RCTs and quasi-RCTs). Studies that were published as full reports or short reports were included, as well as published academic theses. The team excluded published abstracts, letters, commentaries, and editorials.

Number of Source Documents

A total of 114,251 references were retrieved on general needle fear, paediatric or adult population subjects. All references were saved in an EndNote library used to identify the 32,155 duplicates. A total of 138 references were retrieved manually from various sources (e.g., reference lists, personal communications, etc.). The authors screened the remaining 82,234 unique references (search results and manually found references) in the Endnote library against the inclusion criteria. Of these, 136 were included, 12 had duplicate data*, and 82,088 were excluded.

*Note: The 12 studies in this group contained data that were either superseded or reanalyzed in the group of 136 included studies.

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Not Given)

Rating Scheme for the Strength of the Evidence

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) system provided the general framework for the formulation of recommendations and the synthesis of the research evidence. Quality of evidence across critical and important outcomes was assessed as very low, low, moderate or high on the basis of five factors: methodologic limitations, inconsistency, indirectness, imprecision and publication bias.

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Data Extraction

Data from eligible studies were extracted and checked by at least 2 reviewers in customized data extraction forms. Before extraction, all evidence leads provided feedback regarding the usability and comprehensiveness of the extraction forms. Data forms used an outcome-based approach, as specified by the Grading of Recommendations Assessment, Development and Evaluation (GRADE) methodology. Reviewers resolved any disagreements through discussion or, if required, consultation with a third individual (i.e., the project lead and first author).

Data extracted from each study included: author; country; year of publication; age of participants; sample size; design details; procedure and intervention details; comparison; and critical outcomes. Summary statistics (e.g., means, standard deviations [SDs]) and sample sizes were extracted for critically important and important outcomes for each clinical question by at least 2 reviewers using the data extraction sheet. Studies including multiple treatment arms could contribute to several analyses (i.e., the same study could provide data for several clinical questions). Only data from the relevant treatment arms were included in any particular analysis. If a study provided multiple arms for 1 analysis, the sample size was divided by the appropriate number so as not to double-count individuals within the analysis.

If not provided, summary statistics were estimated from graphs and/or calculated from medians and ranges or other parameters (e.g., standard errors [SEs], interquartile ranges, 95% confidence intervals [CIs]) using established formulae and statistical programs (RevMan version 5.2; the Cochrane Collaboration, Copenhagen, Denmark). If not provided, sample size was estimated by dividing the total sample size by the number of groups. When data could not be obtained, a descriptive summary of the findings, as reported by the authors, was included in the review. Data were abstracted using an intent-to-treat (ITT) approach; however, if ITT results were not available, a per-protocol approach was used. Attempts were made to contact study authors by email in situations whereby additional information was needed to clarify methods and/or summary statistics.

Steps were undertaken to provide unique identifiers for included studies in the software programs used to carry out the review (i.e., RevMan, GRADEprofiler). Studies were identified using the following notation: "First Author" "Year of Publication" [e.g., Taddio 2014]. If studies contributed to multiple analyses, then "(#)" was added to enable their discernment [e.g., Taddio 2014 (1)]. If the same author published more than 1 study in the same year, then a lower case letter was added for subsequent articles [e.g., Taddio 2014 a (1)].

Quality of Research Evidence in Individual Studies

The included trials were not masked to reviewers. Methodological quality of included studies was assessed by at least 2 reviewers at the outcome level using the Cochrane risk of bias tool (https://bmg.cochrane.org/assessing-risk-bias-included-studies). Domains evaluated included: sequence generation, allocation concealment, blinding of study participants and personnel, blinding of outcome assessors, incomplete outcome data, selective outcome reporting, and other sources of bias. When available, published studies were compared with trial registration information to evaluate selective outcome reporting. Ratings incorporated information from both the published paper and any supplemental data provided by the authors. Discrepancies were resolved by consensus and with the assistance of a third reviewer, if necessary. The results were used to rate the quality of the evidence and to evaluate heterogeneity in meta-analyses.

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Team Composition

The HELPinKids&Adults team included 25 individuals from across Canada with expertise in pain, fear, medicine, nursing, pharmacy, psychology, vaccinology, infectious diseases, epidemiology, guideline development, knowledge translation (KT), library sciences, public health, family advisory/advocacy and health policy. Eighteen members of the HELPinKids&Adults team formed the guideline panel group.

Guideline Development

The guideline team used the Appraisal of Guidelines for Research and Evaluation (AGREE)-II tool (www.agreetrust.org) as the overarching methodology for guideline development. Grading of Recommendations Assessment, Development and Evaluation (GRADE) (www.gradeworkinggroup.org/publications/jce_series.htm) and Cochrane (http://handbook.cochrane.org) methods provided the general framework for the development of recommendations and the synthesis of research evidence (see Box 1 in the original guideline document).

All members of the HELPinKids&Adults team participated in delineating the scope and clinical questions, and reviewed and approved the recommendations. The guideline panel group reviewed the evidence base and approved the first draft of the recommendations before consideration by the whole team. Two smaller working groups oversaw the development of the evidence base (Evidence Lead group) and knowledge translation (KT group) aspects. The chair oversaw all aspects of the project.

Practice recommendations were made for 49 clinical questions organized into five domains of pain management interventions (the "5P" approach): procedural, physical, pharmacologic, psychological and process.

Formulation of Recommendations

Consistent with the GRADE approach, recommendations were issued (rather than neutral or no recommendation positions) for each clinical question, either positive or negative, with an accompanying rationale. The guideline panel considered the following factors in determining the direction and strength of each recommendation: strength of evidence (magnitude of effect, confidence in estimates of effect), balance between benefits and harms, uncertainty about values and preferences, and resource use. Interventions with a larger benefit and higher certainty of benefit were more likely to receive a strong recommendation. The panel prioritized the perspective of the individual being vaccinated over other perspectives (e.g., parents, clinicians, public health, society) and considerations (e.g., economic considerations) when formulating the recommendations.

Recommendations were generally applied to broad developmental stages, including: children 0-3 years, children >3-12 years, adolescents >12-17 years, and adults. There is some overlap in ages across these categories (i.e., children aged 3 and 12 years are included in 2 separate categories) owing to the need to balance (over)-simplification in creating age categories with appropriate guidance, overlap in the underlying literature base, as

well as substantial differences in developmental trajectories of individual children. Where possible and deemed appropriate, further sub-divisions were made, and/or categories collapsed.

Clinical questions included in the guideline are framed in the guideline in reference to a particular comparator unless no treatment/placebo is used. For each clinical question, a brief preamble is provided, followed by a recommendation that includes a description in parentheses of the strength of recommendation (strong, weak) and quality of evidence (high, moderate, low, or very low confidence in estimates of effect). The quality for each recommendation was the lowest quality rating among the outcomes judged as critical. The strength of the recommendation is communicated using the words "recommend/recommend against" for strong recommendations and "suggest/suggest against" for weak recommendations. A summary of the evidence base and rationale for the panel's recommendation and implementation (applicability) considerations are then described.

Rating Scheme for the Strength of the Recommendations

The Grading of Recommendations Assessment, Development and Evaluation (GRADE) system provided the general framework for the formulation of recommendations and the synthesis of the research evidence. The team categorized recommendations as strong or weak on the basis of four factors: balance between benefits and harms, strength of evidence for critical outcomes, variability in patient values and preferences, and resource implications.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

External Peer Review

Description of Method of Guideline Validation

External Review

The Appraisal of Guidelines Research and Evaluation (AGREE)-II methodology provided the framework for external review of the guideline. Firstly, the guideline was reviewed by stakeholder organizations with liaison members on the HELPinKids&Adults team, including: British Columbia Centre for Disease Control, Canadian Center for Vaccinology, Canadian Family Advisory Network, Canadian Paediatric Society, Canadian Psychological Association, College of Family Physicians of Canada, Immunize Canada and the Canadian Public Health Association.

Secondly, the team asked external reviewers to review the guideline. External reviewers were comprised of individuals with the relevant content expertise (e.g., pain, guideline methodology), individuals representing stakeholder organizations, or individuals that were members of stakeholder organizations but did not represent them (see the original guideline document for the individual names and organizations). Changes were made to address identified areas of concern. Then the guideline was finalized.

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Prevention of pain during vaccines and relief of distress

See the text after the recommendations in the original guideline document for magnitude of benefits and the "Implementation Considerations" sections in the full guideline (see the "Availability of Companion Documents" field) for more information.

Potential Harms

- Common side effects of topical anesthetics include temporary skin color discoloration, including erythema and blanching. Discomfort from removal of the occlusive dressing can also occur. Systemic toxicity and allergic reactions are rare.
- Caution is recommended with respect to positioning during vaccine injections to avoid falls; supported or a reclined sitting position are possible options.

Qualifying Statements

Qualifying Statements

Limitations of the Guideline

Version 2.0 of the HELPinKids&Adults clinical practice guideline takes a broad approach to addressing vaccination pain by including individuals spanning all developmental stages (infancy through adulthood) and including relevant outcomes for specific interventions. The recommendations are limited to the available evidence at the time the systematic reviews were undertaken. Across clinical questions, there was a small number of included studies (and participants) and methodological limitations that impacted on the confidence in the estimates of effect of different interventions. In several instances, the team used indirect evidence (i.e., outside of the context of vaccine injections, for example, venipuncture) to base their decisions. The evidence base for interventions was not equally available for all age groups, and some extrapolation of findings was made across developmental periods based on clinical judgement, related literature and panel consensus. From adolescence through adulthood, there was very little research, precluding examination of interventions in different age groups (e.g., young adult vs. elderly) and health status (e.g., healthy vs. compromised). The guideline does not provide specific guidance for individuals with co-morbidities (e.g., cancer, depression, autism); however, these individuals were not specifically excluded from the evidence base and may have been included in the evidence for certain clinical questions. There was a dearth of literature for many important outcomes (e.g., vaccine compliance).

The guideline excluded interventions which cannot be implemented by immunizers because of regionally approved labelling instructions or availability of specific products (e.g., varying the route of administration of a vaccine or choosing among vaccines to reduce pain). In addition, clinical questions regarding the impact of pre-emptive analgesia and interventions aimed at reframing memory of past vaccination experiences were excluded because the data was scant, of poor quality, and mostly included indirect evidence whereby the populations/context were deemed to be too different for extrapolation to vaccination. While excluded, the questions are deemed highly clinically relevant and are highlighted in the section titled "Future Research" in the full guideline (see the "Availability of Companion Documents" field).

Setting and Situation Factors (Mass and School-Based Programs)

The guideline does not include recommendations for setting and situational factor interventions to reduce pain due to lack of experimental work in this area. Based on a qualitative review of available literature, the team offers some good clinical practice recommendations for vaccination programs involving mass vaccinations, particularly school-based vaccination programs, with the goal of further reducing pain and fear. While there is no consensus on whether individuals should be vaccinated with a (helpful) peer present or not, there does appear to be general agreement that individuals should not be visible to groups of others waiting to receive vaccinations. Given that the potential harm of negative vicarious learning seems to outweigh potential benefit of appropriate modeling, privacy is recommended. This could be achieved by using separate rooms or with privacy screens (although privacy screens do not block sound). There is general consensus that large groups of individuals should not be kept waiting within the vaccination area or lined up just outside. If groups of individuals are waiting together, it can increase fear within individuals and risk emotion contagion (which can increase pain sensation). Overall, the environment should be kept as calm and non-threatening as possible (e.g., keep distress-provoking objects such as needles and syringes out of sight).

Implementation of the Guideline

Description of Implementation Strategy

No single intervention included in this guideline is expected to prevent all pain (i.e., achieve a level of pain of "0"). Individual interventions can be combined, as appropriate, to improve pain relief. For young and school-aged children, because of the high levels of distress with vaccine injections and higher potential for long-term harm (i.e., development of needle fear and health care avoidance), a more comprehensive and consistent approach is recommended. With maturity, a more self-directed and individualized approach can be used.

Pain mitigation is considered part of good vaccination clinical practice by the World Health Organization, which has accepted the most practical interventions from this guideline for global implementation. All involved in vaccination programs need to identify and support clinician interest, willingness and ability to adopt these guideline recommendations to achieve best practices. Additional resources (e.g., supplies, personnel) may be required to educate and support clinicians, parents and individuals to implement these recommendations.

Methods already used for education about vaccination (e.g., verbal instruction, pamphlets, videos) are effective for education about pain mitigation. Sample resources are currently available from Immunize Canada (www.immunize.ca) and HELPinKids&Adults (http://phm.utoronto.ca/helpinkids). Training can occur across various different clinical (e.g., hospital, outpatient clinic) and educational (e.g., prenatal class, school) settings.

Importantly, many pain mitigation interventions can be offered for little or no cost. Even for those with costs, the costs may be offset by avoiding the costs of subsequent harm from unmitigated pain and fear, including the negative impact on health outcomes due to vaccine hesitancy and noncompliance with other health care interventions, and the costs for treatment of needle fears that have developed due to poorly managed pain. Performance metrics can include clinical indicators (e.g., pain intensity, fear intensity), process indicators (e.g., use of pain interventions, compliance with vaccination) and conceptual indicators (e.g., knowledge, satisfaction). Appendix 5 (see the "Availability of Companion Documents" field) and a global vaccine safety research network (https://brightoncollaboration.org) offer some sample tools for assessing pain and related outcomes, and documenting pain interventions used.

Implementation Tools

Chart Documentation/Checklists/Forms

Patient Resources

Resources

Staff Training/Competency Material

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Bibliographic Source(s)

Taddio A, McMurtry CM, Shah V, Pillai Riddell R, Chambers CT, Noel M, MacDonald NE, Rogers J, Bucci LM, Mousmanis P, Lang E, Halperin SA, Bowles S, Halpert C, Ipp M, Asmundson GJ, Rieder MJ, Robson K, Uleryk E, Antony MM, Dubey V, Hanrahan A, Lockett D, Scott J, Votta Bleeker E, HELPinKids&Adults. Reducing pain during vaccine injections: clinical practice guideline. CMAJ. 2015 Sep 22;187(13):975-82. [27 references] PubMed

Adaptation

Not applicable: This guideline was not adapted from another source.

Date Released

2015 Sep 22

Guideline Developer(s)

HELPinKids&Adults - Independent Expert Panel

Source(s) of Funding

The Canadian Institutes of Health Research provided funding for HELPinKIDS&Adults activities (KRS 132031). The Mayday Fund supported publication. The funding agencies did not have any input into the guideline.

Guideline Committee

HELPinKids&Adults team

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

Financial and intellectual conflicts of interest were disclosed by all members. Individuals with self-identified conflicts were allowed to participate in all discussions, but were excluded from voting on guideline recommendations in areas of conflict. One government agency representative was an observer and did not participate in voting on recommendations. Individuals from industries manufacturing or distributing vaccines or pain treatments were excluded from participating.

Competing interests: Anna Taddio declares a grant from Pfizer, and study supplies from Natus and Ferndale. Christine Chambers declares consultation fees from AbbVie. Lucie Bucci declares a relationship with government agencies and grants from Merck, GlaxoSmithKline, Novartis, Sanofi and Pfizer. Eddy Lang is a member of the Grading of Recommendations Assessment, Development and Evaluation (GRADE) working group and declares consultation fees from the International Liaison Committee on Resuscitation. Scott Halperin declares grants from GlaxoSmithKline, Sanofi, Novartis, Pfizer, Merck, PREVENT (Pan-Provincial Vaccine Enterprise Inc.), Immunovaccine, Novavax, Janssen and Folia Biotech. No other competing interests were declared.

Guideline Endorser(s)

AnxietyBC - Nonprofit Organization

Canadian Association of Paediatric Health Centres - Nonprofit Organization

Canadian Child and Youth Health Coalition - Clinical Specialty Collaboration

Canadian Family Advisory Network - Not stated

Canadian Nursing Coalition for Immunization - Clinical Specialty Collaboration

Canadian Paediatric Society - Medical Specialty Society

Canadian Pharmacists Association - Professional Association

Canadian Psychological Association - Professional Association

Canadian Public Health Association - Nonprofit Organization

College of Family Physicians of Canada - Professional Association

Immunize Canada - Clinical Specialty Collaboration

Nurse Practitioners Association of Ontario - Professional Association

Guideline Status

This is the current release of the guideline.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Available from the Canadian Medical Association Journal (CMAJ) Web site .

Availability of Companion Documents

The following are available:

- The online appendices, including algorithms, full guideline, and sample tools for pain mitigation, are available from the Canadian Medical Association Journal (CMAJ) Web site .
- Methodology information, systematic reviews, and a commentary are available from the Clinical Journal of Pain Web site .
- A podcast related to the guideline is available from the CMAJ Web site .
- CME credit related to this guideline is available from the CMAJ Web site .

Patient Resources

Sample resources are currently available from the HELPinKids&Adults Web site and the Immunize Canada Web site .

Please note: This patient information is intended to provide health professionals with information to share with their patients to help them better understand their health and their diagnosed disorders. By providing access to this patient information, it is not the intention of NGC to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

This NGC summary was completed by ECRI Institute on February 2, 2016. The information was verified by the guideline developer on March 7, 2016.

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